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10/500,905	01/31/2005	Harry Richard Claringburn	P/62303	1397

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EXAMINER	
LIU, LI	
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2613	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/500,905	Applicant(s) CLARINGBURN ET AL.	
	Examiner LI LIU	**Art Unit** 2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 April 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *9,10,12,13,15 and 16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *9,10,12,13,15 and 16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 July 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed on 4/30/2009 have been fully considered but they are not persuasive and moot in view of the new ground(s) of rejection. The examiner has thoroughly reviewed Applicant's amendment and arguments but firmly believes that the cited reference reasonably and properly meet the claimed limitation as rejected.

1). Applicant's argument – "It is clear that Corio's disclosure has nothing to do with optical telecommunications networks. A person or ordinary skill in the art would not modify the teaching of Caroli with the teaching of Corio, because Corio' s disclosure is not related to the field of optical telecommunications networks".

Examiner's response – In response to applicant's argument that Corio is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Corio discloses that when the variable attenuator is used for power controlling, the output power of the laser needs be operating at maximum so that the attenuator can properly control or attenuate the power of the laser output and obtain the desired power level. In applicant system, the variable optical attenuator (VOA) is used to block channels or control an amplitude of the added signal, the optical sources for adding signal is set to run at maximum power. That is, reference Corio is reasonably pertinent to the particular problem with which the applicant was concerned:

set the output power of the light source at maximum power so that the variable attenuator can be used to control the amplitude of the light signal to be added. It is also obvious that if the light source is run at minimum power, the VOA cannot participate in controlling the power since the VOA functions as an attenuating not amplifying.

2). Applicant's argument – "If the whole apparatus disclosed by Corio (i.e., elements 10, 12, 18 and 20 with connecting fibers) is considered as the "signal source" for the add/drop node of Caroli, then it is clear that said signal source does not operate at maximum power, because laser 10 operates at the minimum, and not at the maximum, power setting. This means that there is still some (substantial) power that is not used. The skilled person would not further modify the teaching of Corio by running both lasers at maximum power, because Corio teaches away from that. Corio clearly states that, in order for his invention to work (i.e., to increase the dynamic range -- col. 2, lines 43-44), then the two lasers must work in this way -- one at the maximum, and the other at the minimum, power setting".

Examiner's response – As shown in Figure 5, Corio does not disclose that laser 10 always "operates at the minimum, and not at the maximum, power setting" and "that there is still some (substantial) power that is not used", Corio never state "the two lasers must work in this way -- one at the maximum, and the other at the minimum". The power of the laser 10 still can be coarsely adjusted (refer Figure 5); because no attenuator is used with the laser 10, the power of the laser 10 can be adjusted by adjust the driving current of the laser, and the laser 10 also can be running at the maximum level (column 3 line 51-54, both laser can operate at full output level). Corio teaches that by setting

the laser (laser 12) at maximum power, the variable attenuator can accurately (fine tune) control/adjust the power level that can be inputted into the fiber. Corio also mentions "[a]lthough a two laser diode implementation has been described, it should not be taken as a limitation. This approach may be implemented with more than two laser diodes to additionally improve dynamic range and/or increase the maximum available output power if the additional performance is required". Corio does not teach away from using two variable attenuators and two lasers at maximum power.

The reference Corio is used to combine with Caroli to teach that while the variable attenuator is used for control the power level of a light source, the power of the light source needs be running at maximum power so that the variable attenuator can be used to control the amplitude of the light signal to be added.

3). Applicant's argument – "If the Examiner were to argue that only one branch of Corio' s solution could be used to modify the teaching of Caroli, then it is respectfully submitted that the skilled person would not try that, because one can benefit from Corio's solution only when there are two lasers operating together as described by Corio. Any assumption that one laser operating at a maximum power would be the signal source at the add path, and that the other laser would be the signal source operating on the through path, is not correct"

Examiner's response – As discussed above, the reference Corio is used to combine with Caroli to teach that while the variable attenuator is used for control the power level of a light source, the power of the light source needs be running at maximum power, and then the variable attenuator can fully perform its function and

control the amplitude of the light signal to the desired level. Corio clearly discloses the structure of the laser and variable attenuator combination, and technique to set the laser at the maximum power and adjust/tune the variable attenuator so to provide desired power level. Corio's teaching can be used wherever attenuators and light sources are used for power controlling. Even only one laser is used in a system, the variable attenuator still can be used to control signal power, which is from the laser running at maximum power, to a desired power level.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 9, 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Caroli et al (US 2003/0002104) in view of Corio (US 5,436,921).

1). With regard to claims 9 and 12, Caroli discloses a dense wavelength division multiplexing (DWDM) optical communications network having a plurality of nodes (Figures 1 and 4, the ADD/DROP nodes) for an n-channel dense wavelength division multiplexing (DWDM) optical network (Figures 1 and 4, N channels are added or dropped), each node comprising: an add path (e.g., 431 in Figure 4) for adding an n-channel wavelength multiplex onto the network, some of the n-channels carrying signals to be added onto the network (e.g., Figure 4, some of the N channels are added,

[0048]), the add path including an n signal channel combiner (e.g., MUX 435, 436 and combiner 437 in Figure 4) for combining the n-channel signals, an optical amplifier (e.g., the amplifier 438 in Figure 4) for amplifying an output of the signal combiner, a multichannel wavelength selective filter (e.g., the wavelength blocker/dynamic gain equalization function: λ-BLOCKER/DGEF 440 in Figure 2) with variable-per-channel attenuation (DGEF in the wavelength blockers, the DGEF provides a per-channel gain equalization capability, [0048]) for blocking channels not carrying signals to be added to the network ([0048], the wavelength blocker 440 is configured to block those wavelengths corresponding to optical channels not being added at node 415 while passing the wavelengths of those optical channels being added at node 415. That is, for “those optical channels not being added at node 415”, the corresponding channels or signal paths in the λ-BLOCKER/DGEF do not carry any signals, except noise. Then, those channels are blocked in the channel/signal path of the blocker/DGEF to be added to the network) or controlling an amplitude of the added signals ([0048], DGEF provides a per-channel gain equalization capability so that the power of the optical channels being added can be maintained at a level approximately equal to the average of the power of the optical channels in "through" path 426), and an add coupler for coupling the add path to the network (e.g., the combiner 430 in Figure 4).

But, Caroli et al does not expressly state the node further comprising means for running sources for generating the n-channel signals at maximum power.

However, Corio teaches a power control system and method (e.g., Figure 2), wherein the running source (e.g., the Laser Diode 12) generates the light signal at

maximum power (column 2 line 22-23, and column 5 line 35-36, and column 6 line 28-29), and then an attenuator (e.g., 18 in Figure 2) is used to control the power output from the attenuator to a desired level.

Caroli et al teaches that the wavelength blocker with variable-per-channel attenuation (DGEF) blocks channels not carrying signals to be added to the network and controlling an amplitude of the added signals, and minimizing amplified spontaneous emission ASE noise, and then the signal to noise ratio is increased. If the sources are running below a predetermined level, the DGEF or attenuator would not participate in the controlling, and the desired power level may not be obtained. Corio teaches that by setting the laser at maximum power, the variable attenuator can accurately control/adjust the power level that can be inputted into the fiber. The combination of Caroli and Corio teaches that while the variable attenuator is used for control the power level of a light source, the power of the light source needs be running at maximum power so that the variable attenuator can be used to control the amplitude of the light signal to be added.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the power control scheme as taught by Corio to the system of Caroli et al so that the signal source is run at full power, and then gain equalizer/attenuator can perform the full function to conveniently and accurately control the output power to a desired level, and the desire SNR can be obtained.

2). With regard to claim 13, Caroli discloses a method of adding an n-channel dense wavelength division multiplexing (DWDM) signal to an n-channel DWDM optical

network (Figures 1 and 4, N channels are added or dropped), comprising the steps of: combining (e.g., MUX 435, 436 and combiner 437 in Figure 4) the signals from a plurality of signal sources (e.g., λ1 to λN in Figure 4) to provide an n-channel add signal combined output signal (the multiplexed signal from combiner 437); amplifying the combined output signal (the amplifier 438 in Figure 4); using a multichannel wavelength selective filter with variable-per-channel attenuation (e.g., the wavelength blocker/dynamic gain equalization function: λ-BLOCKER/DGEF 440 in Figure 2; the DGEF in the wavelength blockers provides a per-channel gain equalization capability, [0048]) to selectively block channels not carrying any signals to be added to the network ([0048], the wavelength blocker 440 is configured to block those wavelengths corresponding to optical channels not being added at node 415 while passing the wavelengths of those optical channels being added at node 415. That is, for “those optical channels not being added at node 415”, the corresponding channels or signal paths in the λ-BLOCKER/DGEF do not carry any signals, except noise. Then, those channels are blocked in the channel/signal path of the blocker/DGEF to be added to the network) or to control an amplitude of the added signals ([0048], DGEF provides a per-channel gain equalization capability so that the power of the optical channels being added can be maintained at a level approximately equal to the average of the power of the optical channels in "through" path 426); coupling the n-channel add signal onto the optical network (e.g., the combiner 430 in Figure 4 couples the N-channel add signal onto the optical network).

But, Caroli et al does not expressly state the node further comprising means for running sources for generating the n-channel signals at maximum power.

However, Corio teaches a power control system and method (e.g., Figure 2), wherein the running source (e.g., the Laser Diode 12) generates the light signal at maximum power (column 2 line 22-23, and column 5 line 35-36, and column 6 line 28-29), and then an attenuator (e.g., 18 in Figure 2) is used to control the power output from the attenuator to a desired level.

Caroli et al teaches that the wavelength blocker with variable-per-channel attenuation (DGEF) blocks channels not carrying signals to be added to the network and controlling an amplitude of the added signals, and minimizing amplified spontaneous emission ASE noise, and then the signal to noise ratio is increased. If the sources are running below a predetermined level, the DGEF or attenuator would not participate in the controlling, and the desired power level may not be obtained. Corio teaches that by setting the laser at maximum power, the variable attenuator can accurately control/adjust the power level that can be inputted into the fiber. The combination of Caroli and Corio teaches that while the variable attenuator is used for control the power level of a light source, the power of the light source needs be running at maximum power so that the variable attenuator can be used to control the amplitude of the light signal to be added.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the power control scheme as taught by Corio to the system of Caroli et al so that the signal source is run at full power, and then gain

equalizer/attenuator can perform the full function to conveniently and accurately control the output power to a desired level, and the desire SNR can be obtained.

4. Claims 10, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Caroli et al and Corio as applied to claims 9 and 13 above, and in further view of Claringburn et al (EP 1156607).

1). With regard to claim 10 and 15, Caroli et al and Corio disclose all of the subject matter as applied to claims 9 and 13 above. And Caroli et al further discloses wherein the variable attenuator on any given channel is set to block the signal on that channel if no signal on that channel is to be added onto the network, or used to control the amplitude of the added signals, and a variable optical attenuator arranged within the wavelength blockers ([0048]).

But, in Figure 4, Caroli et al does not expressly show "the multichannel wavelength selective filter includes an n-channel demultiplexer having n outputs, an n-channel multiplexer having n inputs, and the variable optical attenuator is arranged between each of the demultiplexer outputs and multiplexer inputs".

Although Caroli et al does not expressly show the demultiplexer and multiplexer inputs in the wavelength selective filter, it is obvious that an n-channel demultiplexer and an n-channel multiplexer are present in the wavelength blocker. Caroli et al teaches that the λ-BLOCKER/DGEF wavelength blockers can block some specific wavelengths and pass other wavelengths and incorporate a dynamic gain equalization function (DGEF) to provide a <u>per-channel</u> gain equalization capability so that the power of the optical channels being added can be maintained at a level approximately equal to the

average of the power of the optical channels in "through" path ([0048]). Therefore, it is obvious that an n-channel demultiplexer and an n-channel multiplexer is present in the wavelength blockers and the attenuator/DGEF must be arranged between each of the demultiplexer outputs and multiplexer inputs so that the multiplexed signal can be demultiplexed and the individual channel can be dynamically controlled (per-channel) by the DGEF.

Claringburn et al, in the same field of endeavor, teaches such a multichannel wavelength selective filter (Figure 1, the channel control unit CCU 50), which includes an n-channel demultiplexer (the Demux 300 in Figure 1) having n outputs, an n-channel multiplexer the Mux 330 in Figure 1) having n inputs, and the variable optical attenuator (the CELL array 310 in Figure 1) is arranged between each of the demultiplexer outputs and multiplexer inputs.

Therefore, it would also have been obvious to one of ordinary skill in the art at the time the invention was made to apply the same structure as taught by Claringburn et al to the system of Caroli et al and Corio so that the individual channels can be controlled and processed, and signal to noise ratio can be increased.

2). With regard to claim 16, Caroli et al and Corio and Claringburn et al disclose all of the subject matter as applied to claims 13 and 15 above. And Caroli et al further discloses wherein the non-signal carrying channels are blocked by attenuating to zero the outputs from the demultiplexer corresponding to those channels ([0048], the channels not carrying signal are blocked, that is, the outputs from the demultiplexer corresponding to those channels are attenuated to zero, and the ASE noise at

corresponding channel position is also filtered; also refer to [0031] and [0032]. Note, Claringburn et al also teaches to use the attenuating means to block radiation components).

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to LI LIU whose telephone number is (571)270-1084. The examiner can normally be reached on Monday-Friday, 8:30 am - 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Vanderpuye can be reached on (571)272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/L. L./
Examiner, Art Unit 2613
July 12, 2009

/Kenneth N Vanderpuye/
Supervisory Patent Examiner, Art Unit 2613